BOEING PLANT 2 DSOA CORRECTIVE MEASURE AND HABITAT PROJECT DEMOBILIZATION AND DECONTAMINATION WORK PLAN: SOUTH SHORELINE

February 2015

Boeing Plant 2 DSOA Corrective Measure and Habitat Project, Demobilization and Decontamination Work Plan: South Shoreline

I. Introduction

The purpose of this document is to detail the general sequence of work and the typical procedures that will be used to decon and demobilize equipment used for the Boeing DSOA project.

II. Sequence of work

After completion of sediment generating remedial tasks for the Boeing DSOA project area, decon and demobilization activities will commence. This will begin with decon of barges and other on-water equipment. Once performed, the demobilization of each separate area of the Dredge Return Water System (DRWS) can begin. It is anticipated that the sediment processing area (SPA) will be deconned first, followed by the sedimentation basin, and then finally the dredge return water treatment area. These areas may be deconned in whole or in segments as necessary to support safe and efficient work methods. As decon and demob activities are completed, site restoration will begin on the South Shoreline property. For a more detailed description of site restoration activities and sequence of work see Table 2. The site will be restored to an equipment and debris free work area so the site is left clean and generally in the same condition as it was prior to starting the work, or as otherwise noted in other project documents.

A. Decon Water

Water generated from decontamination activities that does not contain decontamination chemicals or surfactants will be managed in the DRWS or in one of the options listed below. Water generated from decontamination activities that does contain decontamination chemicals or surfactants will be treated in one or a combination of the options listed below.

i. A demobilization water treatment system (DWTS) will be set up on site, which will discharge under a King County Industrial Wastewater permit Authorization No. 4336-01. The DWTS will include sedimentation tanks, sand filters, carbon vessels, and holding tanks, all staged in secondary containment. Treated water will be collected and sampled, as necessary, to verify compliance with King County discharge limits.

ii. Decon water will be collected and transported to Lafarge for treatment through their wastewater treatment system and subsequent discharge to King County under Lafarge's permit. The first batch of any water from decontamination activities sent to the Transload facility will be stored after treatment and prior to discharge to allow direct sampling to verify compliance with King County discharge limits. Boeing will provide EPA with results of such sampling prior to discharge of the treated decontamination water.

iii. Decon water will be collected and transported to be treated at the North Boeing Field Treatment System. Treated water will be collected and sampled, as necessary, to verify compliance with King County discharge limits.

III. Proposed Decon, Re-use, and Disposal Methods

The proposed methods for decon, re-use, and/or disposal, as well as Quality Assurance/Quality Control (QA/QC) activities are detailed below. The different items are grouped based on area of use (see Table 1).

A. On Water Equipment

The on-water equipment includes metal pilings, outfall piping, and barges. The proposed demobilization methods are detailed below.

i. Metal Piling

The metal piling will be pressure washed, as necessary, to remove any visible sediment. QA/QC procedures will include a visual inspection. This item will be suitable for resale or return to vendor.

ii. Outfall Piping
Outfall piping includes unused HDPE pipe and temporary outfall Z piping used for stormwater and both will not require decon. Both are suitable for resale.

iii. All other on-water mobile equipment including the Aberdeen, Skookum, sediment barges, and PC 800 will be deconned as detailed below and as done in previous construction seasons.

- All equipment and structures that have been in contact with liquid or non-liquid PCB remediation waste will be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface", as described in the CS3 RBDA.

B. Sediment Processing Area (SPA)
The SPA includes the Tri-flo, ecology blocks, asphalt, gravel, and liners. The proposed methods are detailed below.

i. Tri-flo
Stericycle (formerly known as Philip Service Corp.) will be onsite to conduct decon of the tri-flo using a surfactant and a double wash and rinse process. Stericycle decon process involves the following steps: First, pressure wash, then spray surface with surfactant and agitate the surfactant with a brush, let sit for 10-15 minutes, pressure wash again, and then repeat. Five wipe samples at random locations will be collected after decon of the tri-flo. This item will be suitable for resale.

ii. Ecology Blocks
The ecology blocks will be handled differently based on if the block was in contact with dredged material or if the block was covered by a liner. Blocks covered by a liner will be suitable for resale. Blocks not covered by a liner will be pressure washed and placed into groups of 15 to 30 blocks. QA/QC will involve sampling one block from the group of 15 to 30. Sampling protocol involves drilling sufficient number of 1 inch diameter to 1 inch depth by rotary hammer in order to obtain sample volume. Samples will be taken near the bottom portion of the block on the side previously in contact with impacted sediment. Intact ecology blocks will be suitable for reuse and resale pending sample results. Broken ecology blocks will be recycled or disposed of pending sample results.

iii. Asphalt
Asphalt will be pressure washed followed by sampling while the asphalt is in place. Sampling protocol involves breaking the asphalt up by a hammer and chisel enough to collect sufficient sample volume. Sample locations are shown in Figure 1 and frequency is based on different levels of potential previous contact with contaminated materials for each area (see Figure 2). Sample results will determine if the asphalt will be recycled or disposed of at an appropriate facility. If recycled, the recycling facility will use a hot batch process in order to prepare asphalt for reuse.

iv. Gravel
Gravel will be grouped in approximate 100 CY piles with one composite sample per pile to determine suitability for reuse, recycle or disposal. See Figure 3 for potential contact.

v. Liners
Liners will be disposed of at an appropriate Subtitle D facility.

vi. All other mobile equipment, including trucks, loaders, and excavator will be deconned as detailed below and as done in previous construction seasons.

- All equipment and structures that have been in contact with liquid or non-liquid PCB remediation waste will be decontaminated using mechanical means or pressure washing to achieve a "clean debris surface", as described in the CS3 RBDA.

C. Settling Basin

The settling basin includes ecology blocks, asphalt, gravel and liners. All items will be handled as previously described in section III. B. (ii – v).

D. Dredge Return Water System (DRWS)

The DRWS consists of ecology blocks, gravel, liners, clarifier, cone tanks, sand filters, bag filters, granular activated carbon (GAC) vessels, electrocoagulation (EC) units, pumps and miscellaneous tanks. The proposed demobilization methods are detailed below.

i. Ecology blocks, gravel, and liners will be handled as previously described in section III. B. (ii, iv, v).

ii. Decon of the clarifier, cone tanks, sand filters, bag filters, GAC vessels, and miscellaneous tanks will be performed by Stericycle and will follow methods described in section III. B. (i). QA/QC procedures for each will require wipe samples (sample frequency based on size of item, see Table 1). Each item will be suitable for reuse.

iii. EC Units
EC units decon will be performed by the owner of the units, Baker Corp. (Baker), but will follow the same double wash/rinse with use of surfactant process as done by Stericycle. One wipe sample per EC unit will be collected as QA/QC. EC units will be returned to Baker and suitable for reuse or resale.

iv. Sand Filter Media
A composite sample will be collected to determine proper disposal.

v. GAC
Used GAC will be sampled to determine proper disposal. A portion of unused GAC will be used in demobilization treatment system, and the remaining unused GAC is suitable for reuse or potential resale.

vi. Pumps
The pumps will be pressure washed on the outside and a double wash/rinse with surfactant will be performed for inner portion. This item will be suitable for reuse.

E. Lay-Down Area

The lay down area includes ecology blocks, gravel and liners. Each item will follow the same procedures as described in section III. B. (ii, iv, v).

F. General Site

General items include ecology blocks, asphalt (pipe crossings only), pumps, and HDPE piping. The procedures for these items are detailed below.

i. Ecology blocks
The blocks in this area will follow the procedures as described in section III. B. (ii).

ii. Asphalt
The asphalt in the general site area includes asphalt berms installed to provide pipe crossings. Asphalt will be pressure washed before removal and recycled at an appropriate facility per section III. B. (iii).

iii. Pumps
Decon of pumps used for rain water and low PCB concentration areas will be performed by a clean water flush. Decon of pumps in higher PCB concentration areas will be

performed by a double wash and rinse recirculation with surfactant as described in section III. D. (vi). All pumps will be suitable for resale.

iv. HDPE Piping

Procedures for decon of HDPE piping will be performed by freshwater rinse, the pipe will then be cut into sections not exceeding 50 linear feet and placed in 400 linear feet groups. QA/QC includes visual inspection of cut pipe and one wipe sample per 400 linear feet group. HDPE pipe will be suitable for resale and reuse pending sample results.

v. DWTS

The decon procedures in section III. D. will be followed for the DWTS system. Decon waste water will be sent to North Boeing Field treatment system, which is permitted for disposal to sanitary sewer after treatment.

vi. Miscellaneous

In the event that additional items are encountered during demobilization not included in Table 1, Boeing may handle the item according to existing Table 1 requirements if there is a direct counterpart to the item. If no direct counterpart exists, EPA will be consulted for demob/decon procedures.

G. Transload Facility

All equipment and structures at Lafarge that have been used for Boeing DSOA project will be deconned according to Waste Management's Work Plan, as has been done in previous construction seasons.

H. Decision Criteria

For bulk sampling the decision criteria will be 1 ppm, which is consistent with PCB residential action levels. The decision criteria for wipe samples will be non-detect (ND) and will meet vendor's standards. All sampling will follow EPA method 8082 will be conducted according to a written sampling and analysis plan, including Quality Assurance Project Plan. See Table 1 for specific decision criteria for each item.

I. Documentation

Information regarding decon and demobilization will be included in the DSOA completion report.

TABLES

Table 1. Proposed Decon, Reuse, Recycle or Disposal Methods and QA/QC Tasks for Boeing DSOA Project Inventory

Inventory/Proposed De-Con/ Proposed Re_use, Re-Cycle or Disposal									
Item #	Area	Item	Quantity	Use (over/Under 50 PPM Material?	Proposed Decon Method	Proposed Re-Use, Re-Cycle or Disposal	QA/QC	Decision Criteria	Condition
1	1 ON-WATER EQUIP.	Metal piling		under 50 ppm	Pressure Wash	Resale	Visual Inspection		
2	1 ON-WATER EQUIP.	Outfall piping		under 50 ppm	none	Resale	none		
3	2 SPA	Triflow	1	TSCA	Stericycle decon *	Resale	5 wipe samples	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	
4	2 SPA	Ecology blocks	185	covered by liner	none	Reuse/Resale	none		at least 15 broken
5	2 SPA	Ecology blocks	250	tsca	pressure wash	Reuse/Resale	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.	
6	2 SPA	Asphalt	1585 tons	1/2 potential tsca	pressure wash	Recycle	9 samples collected while asphalt is in place. Sample locations Figure 1.	If sample < 1 ppm recycle. If sample > 1 ppm associated volume disposed subtitle D. If sample > 50 ppm associated volume disposed Subtitle C.	
7	2 SPA	Gravel	1425 tons	under 50 ppm	none	Reuse/Recycle	1 composite sample/100 CY.	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.	
8	2 SPA	Liners	276,000 sqft	under 50 ppm	none	Dispose Subtitle D			
9	3 SETTLING BASIN	Ecology blocks	205	tsca (25 splash marks)	pressure wash	Reuse/Resale	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.	
10	3 SETTLING BASIN	Ecology blocks	395	under 50 ppm covered by liner	none	Resuse/Resale	none		
11	3 SETTLING BASIN	Asphalt	1585 tons	potential contact	pressure wash	Recycle	7 samples collected while asphalt is in place. Sample locations Figure 1.	If sample < 1 ppm recycle. If sample > 1 ppm associated volume disposed subtitle D. If sample > 50 ppm associated volume disposed Subtitle C.	
12	3 SETTLING BASIN	Gravel	1425 tons	under 50 ppm	none	Reuse/Recycle	1 composite sample/100 CY	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.	
13	3 SETTLING BASIN	Liners	283,000 sqft	under 50 ppm	none	Dispose Subtitle D			
14	4 DRWS	Clarifier	1	tsca	Stericycle decon*	Resale/Recycle/Dispose	4 wipe samples	For resale and recycle: if sample > ND, repeat decon process and verification sampling until ND result is obtained.	
15	4 DRWS	Cone Tanks	2	tsca	Stericycle decon*	Resale/Recycle/Dispose	2 wipe / tank	For resale and recycle: if sample > ND, repeat decon process and verification sampling until ND result is obtained.	
16	4 DRWS	Ecology blocks	235	90% under 50 ppm	none	Resuse/Resale	Blocks placed in approx. 15-30 block groups and sampled by 1" diameter rotary hammer bit to 1" depth; samples taken until sufficient sample volume achieved. Collect from bottom half of block on the side in contact. 1 sample/ approx. 15-30 blocks.	If sample < 1 ppm reuse/resale/recycle. If sample > 1 ppm the 15-30 associated blocks disposed Subtitle D. If sample > 50 ppm the 15-30 associated blocks disposed Subtitle C.	
17	4 DRWS	Gravel	1815 tons	75% tsca 25% no	none	Reuse/Recycle/Dispose	1 composite sample/100 CY	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100 CY pile will be disposed at Subtitle D. If > 50 ppm 100 CY pile will be disposed at Subtitle C.	
18	4 DRWS	Liners	200,232 sqft	under 50 ppm	none	Dispose Subtitle D	none		
19	4 DRWS	Sand Filters	2 skids	tsca	Stericycle decon *	Reuse	1 wipe sample / skid	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	
20	4 DRWS	Sand Filter Media	12 CY	tsca	none	Dispose Subtitle D	1 composite sample	Sample will determine Subtitle D or C disposal.	
21	4 DRWS	Bag Filters	2 skids	tsca	Stericycle decon *	Reuse	1 wipe sample / skid	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	

QA/QC Decision criteria for bulk samples < 1 ppm
Decision criteria for wipe samples ND

Table 1. Proposed Decon, Reuse, Recycle or Disposal Methods and QA/QC Tasks for Boeing DSOA Project Inventory

Item #	Area	Item	Quantity	Use (over/Under 50 PPM Material?	Proposed Decon Method	Proposed Re-Use, Re-Cycle or Disposal	QA/QC	Decision Criteria	Condition
22	4 DRWS	Misc Tanks	4	tsca	Stericycle decon *	Resuse	1-2 wipe sample / tank (dependent on size)	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	
23	4 DRWS	GAC Vessel	4	tsca	Stericycle decon *	Reuse	1 wipe sample / vessel	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	
24	4 DRWS	GAC Used	48,000 lbs	tsca	none	Dispose	1 composite sample	Sample will determine Subtitle D or C disposal.	
25	4 DRWS	GAC Unused	7,000 lbs	no contact	none	Resale/Reuse	none		
26	4 DRWS	Baker Pumps	7	tsca	Pressure wash outside and capsure double rinse recirculation for inner workings.	Reuse	none		
27	4 DRWS	EC Units	2	tsca	Baker decon - same method as Stericycle	Reuse	1 wipe sample/unit	If sample > ND, repeat decon process and verification sampling until ND result is obtained.	
28	5 LAY DOWN	Gravel	260 tons	under 50 ppm	none	Reuse/Recycle	1 composite sample/100 CY	If sample < 1 ppm reuse/recyle. If sample > 1 ppm 100	
29	5 LAY DOWN	Ecology Blocks	30	under 50 ppm	none	Reuse/Resale	none		
30	5 LAY DOWN	Liners	28,728 sqft	under 50 ppm	none	Dispose Subtitle D	none		
31	6 GENERAL SITE	Ecology blocks	30	under 50 ppm	none	Resuse/Resale	none		1/2 are broken
32	6 GENERAL SITE	Asphalt (Pipe Crossings)	340 tons	under 50 ppm	pressure wash	Recycle	none		
33	6 GENERAL SITE	Pumps 3" sump	5		clean water flush	Resale	none		
34	6 GENERAL SITE	Pumps 1"			clean water flush	Dispose	none		
35	6 GENERAL SITE	HDPE Piping							
36	6 GENERAL SITE	12"	750 ft	Unused	none	Resale	none		
37	6 GENERAL SITE	10"	250 ft	tsca	rinse	Resale	For each size: after river water rinse pipe cut into <50 ft sections and placed into 400 ft groups. Do visual inspection. 1 wipe sample/400 ft group.	If sample ND resale or reuse. If sample > ND, 400 ft group of pipe will be disposed as Subtitle D. If sample > 50 ppm, 400 ft group will be disposed as Subtitle C.	
38	6 GENERAL SITE	6"	4450 ft	tsca	rinse	Resale			
39	6 GENERAL SITE	4"	3300 ft	tsca	rinse	Resale			
40	6 GENERAL SITE	3"	500 ft	under 50 ppm	none	Dispose Subtitle D	none		
41	6 GENERAL SITE	10" Fittings							
42	6 GENERAL SITE	90 degrees	9	unused	none	Resale	none		
43	6 GENERAL SITE	Tee	1	unused	none	Resale	none		
44	6 GENERAL SITE	10x6 reducers	2	unused	none	Resale	none		
45	6 GENERAL SITE	18" Buoys	60	under 50 ppm	none		none		
46	6 GENERAL SITE	Pallet of anchors	2	under 50 ppm	none		none		

QA/QC Decision criteria for bulk samples < 1 ppm
Decision criteria for wipe samples ND

Table 2. Sequence of Work

SEQUENCE OF WORK
TASK
MARINE EQUIPMENT
Decon discharge piping, valves, etc.
Decon barges
Decon excavator, loader, crane, and other on-water equipment
SPA AREA
Demobilization water treatment system - permit - if needed
Demobilization water treatment system - rental and setup - if needed
Stericycle Decon tri-flow
Clean up any remaining soil or debris
Remove piping and conduit as appropriate
Create temporary stormwater conveyance and management
Wipe test tri-flow
Remove, pressure wash, and stack interior concrete blocks
Load out debris and solids
Sample interior concrete blocks
Sample asphalt in place
Stericycle Clean catch basins (4), pumping water to settling basin
Remove asphalt
Remove and stack outer concrete blocks (under liner)
Remove gravel - 100 CY piles
Sample gravel/load out gravel
Remove geotextiles and liners
Sweep and clean original asphalt surface
Insert catch basin filter socks
SETTLING BASIN
Dewater basin
Clean up any remaining soil or debris west side
Clean up any remaining soil or debris east side
Remove piping and conduit as appropriate
Load out debris and solids
Pressure wash, remove, and stack interior blocks
Sample interior concrete blocks
Stericycle Clean catch basins (4), pumping water to Demobilization water treatment system
Sample asphalt in place
Remove and stack outer concrete blocks (under liner)
Remove asphalt
Remove gravel - 100 CY piles
Sample gravel/load out gravel
Remove geotextiles and liners
Sweep and clean original asphalt surface
Insert catch basin filter socks

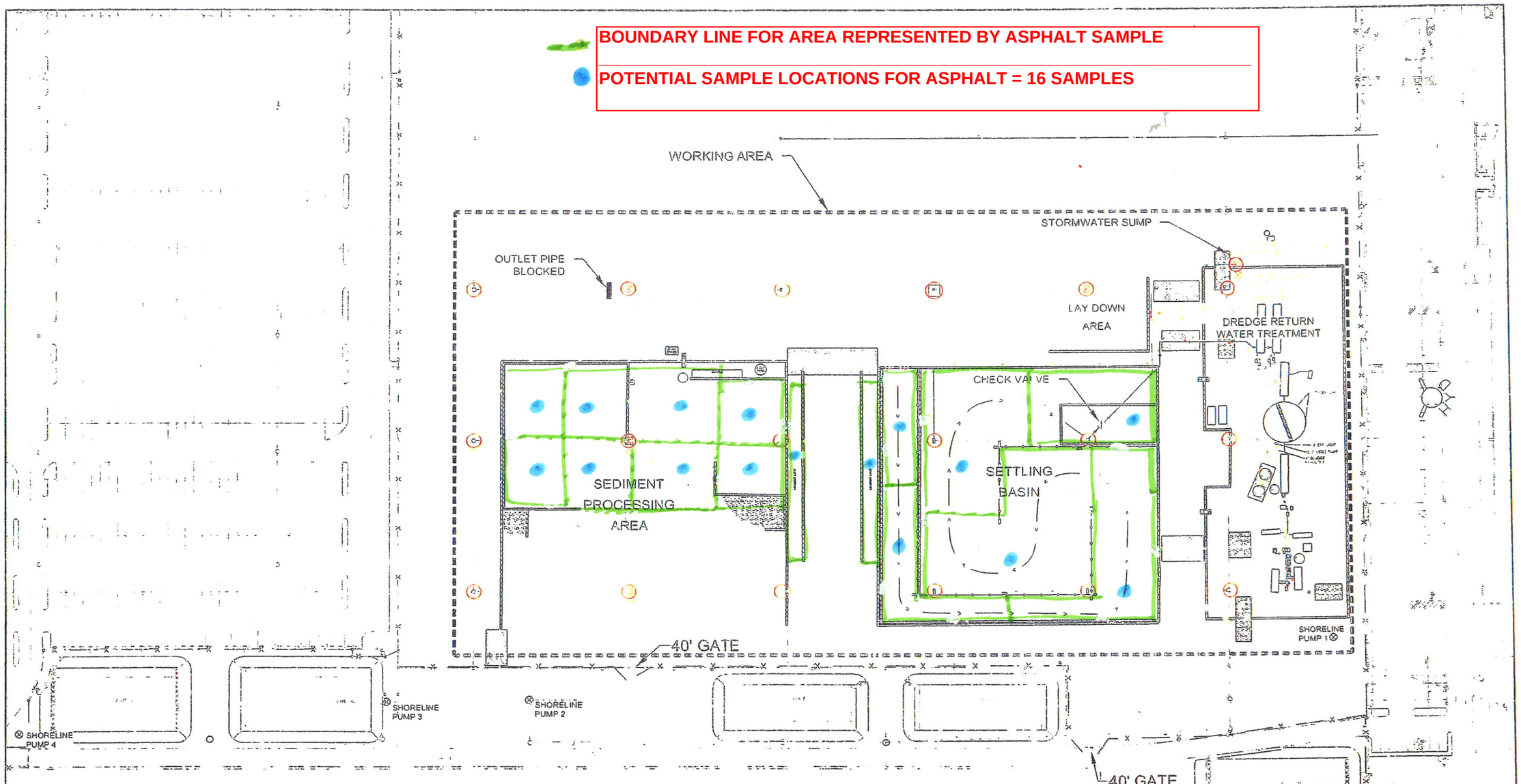
Table 2. Sequence of Work

DRWS
Dewater basin
Decon EC trailers - Baker
Remove piping and conduit as appropriate
Water from defoam and clarifier to post treatment tank and sent thru polishing step
Stericycle Decon of defoam tank and sample
Stericycle decon clarifier and sample
Stericycle decon post treatment tank and sample
Demob defoam tank
Remove filter media from sand filters
Stericycle decon of sand filters and bag filters and sample
Sample defoam and BFP concrete blocks
Demob clarifier tank
Remove GAC from vessels
Stericycle decon GAC filters and sample
Demob of polishing step equipment
Remove gravel - 100 CY piles
Sample gravel
Remove and dispose of liner
Remove and stack concrete blocks
Clean stormwater
Clean and remove Demobilization water treatment system
Solids put in dewatering rolloff and transport liquids to NBF
Sweep and clean original asphalt surface
SITE RESTORATION
Restore surface above Outfall Z
Complete gravel perimeter road
Re-install west security fence
Remove temporary fencing
Repair asphalt surface as necessary
Clean WQ vault
Replace WQ cartridge
Grayhawk Trailer determination/removal
Remove trailers
Remove any remaining electrical equipment that Boeing does not want
Final cleaning and inspection of south surface area

FIGURES

BOUNDARY LINE FOR AREA REPRESENTED BY ASPHALT SAMPLE

POTENTIAL SAMPLE LOCATIONS FOR ASPHALT = 16 SAMPLES



LEGEND

- CONTAINMENT AREA
- CATCH BASINS BLOCKED
- PIPE CROSSING
- 480 VOLT 3" SUMP PUMP
- 110 VOLT 3/4" SUMP PUMP
- ⊗ 6" DIESEL PUMP

APPROXIMATE SCALE IN FEET

0 100 200

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 1

IN CONTACT ASPHALT

WORKING AREA

STORMWATER SUMP

OUTLET PIPE BLOCKED

LAY DOWN AREA

DREDGE RETURN WATER TREATMENT

CHECK VALVE

SETTLING BASIN

SEDIMENT PROCESSING AREA

40' GATE

SHORELINE PUMP 1

SHORELINE PUMP 2

SHORELINE PUMP 3

SHORELINE PUMP 4

40' GATE

LEGEND

- CONTAINMENT AREA
- CATCH BASINS BLOCKED
- PIPE CROSSING
- 480 VOLT 3" SUMP PUMP
- 110 VOLT 3/4" SUMP PUMP
- ⊗ 6" DIESEL PUMP

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

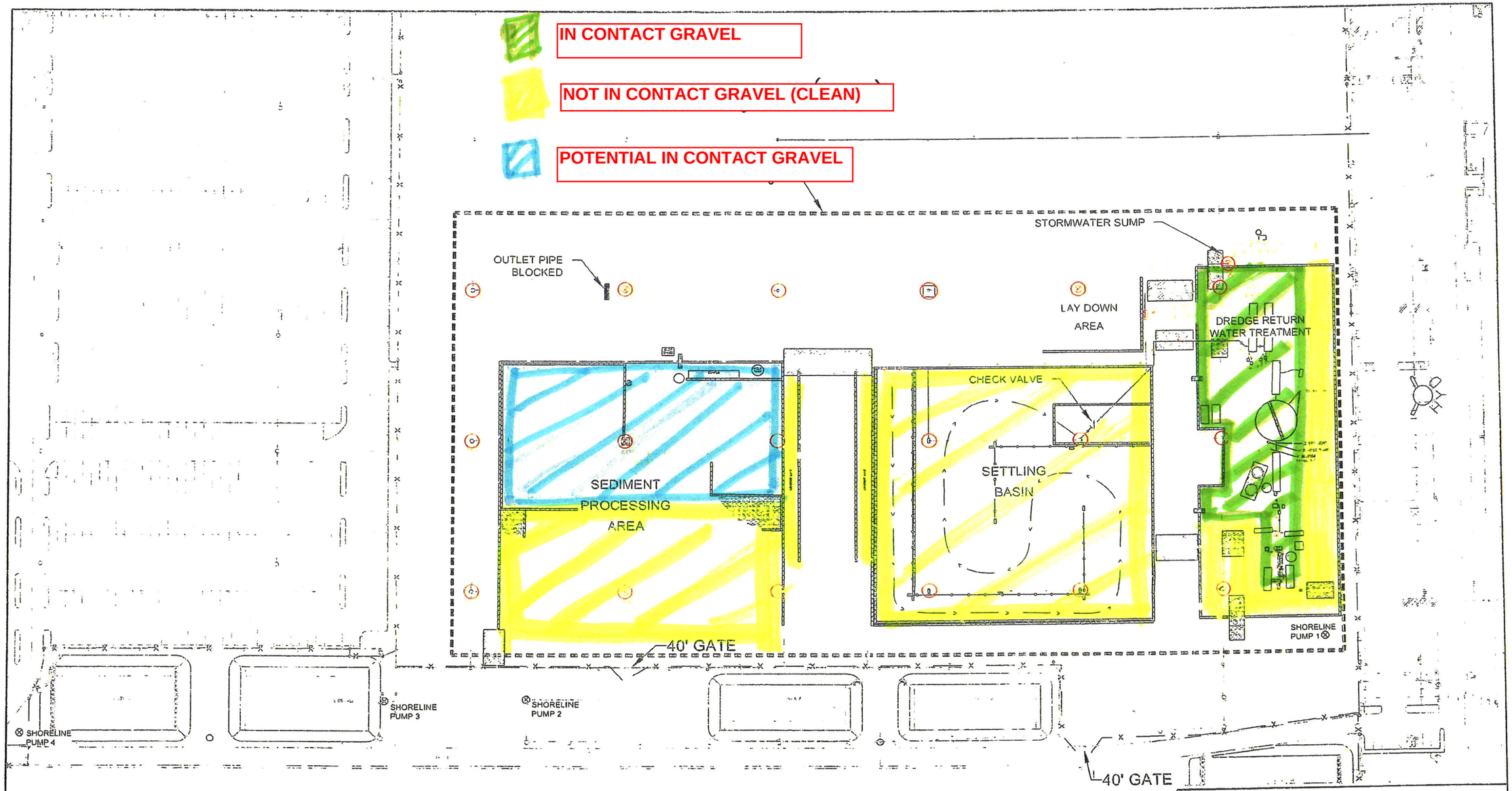
APPROXIMATE SCALE IN FEET

0 100 200

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 2



LEGEND

- CONTAINMENT AREA
- CATCH BASINS BLOCKED
- PIPE CROSSING
- 480 VOLT 3" SUMP PUMP
- 110 VOLT 3/4" SUMP PUMP
- 6" DIESEL PUMP

NOTE:

1. BASEMAP PROVIDED BY ENVIROCON.

APPROXIMATE SCALE IN FEET

0 100 200

BOEING

OFF SEASON BMP SITE MAP
Duwamish Sediment Other Area and Southwest Bank
Corrective Measure
Boeing Plant 2
Seattle/Tukwila, Washington

By: APS	Date: 03/25/14	Project No. 131320090
		Figure 3